Army Space Power

Presented by:

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Background

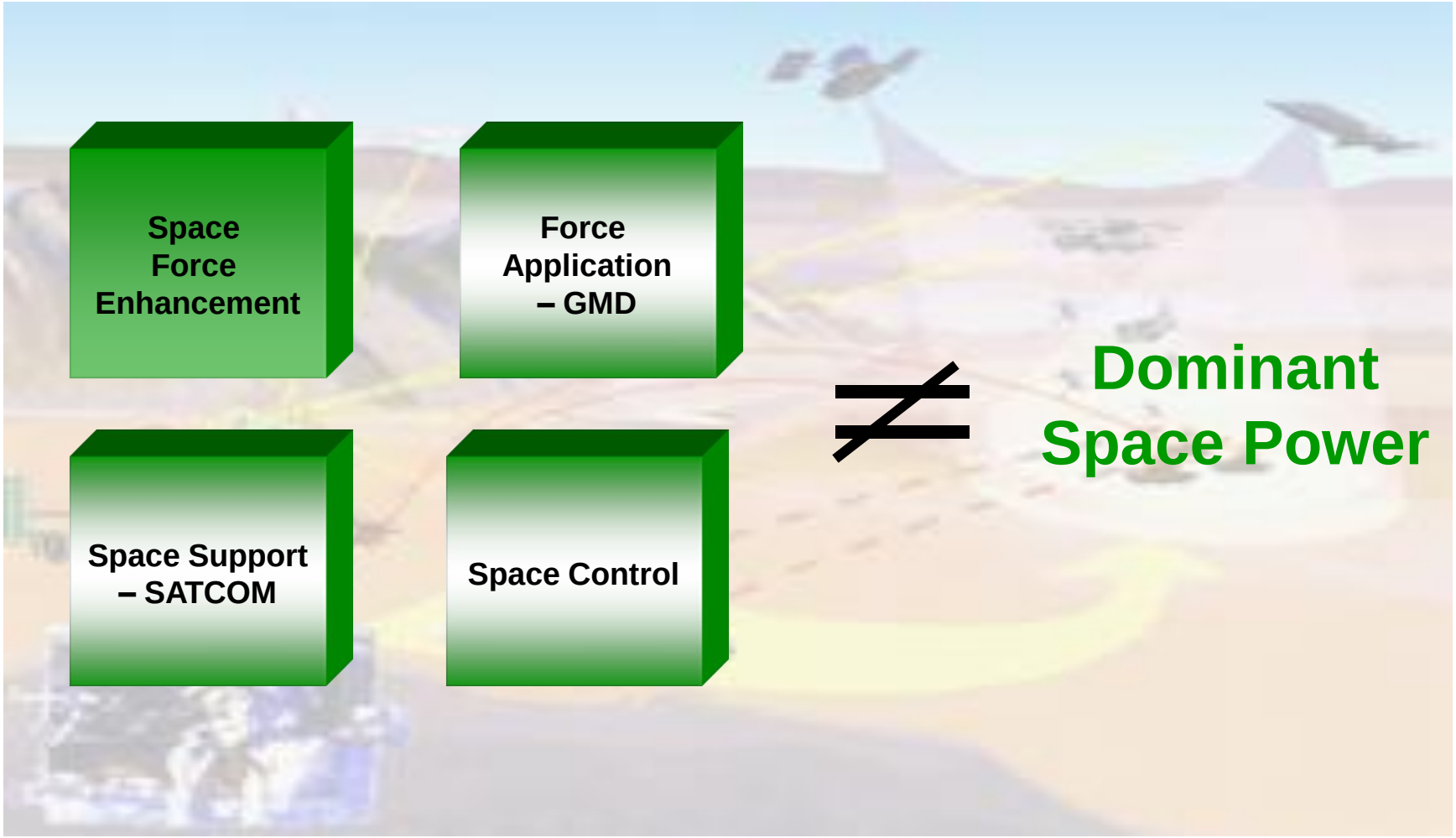
- Documented warfighter requirements demand persistence ***NOW***
  - Army Current Force Capability Gaps — Persistent Comms & ISR
  - SOCOM Combat Mission Need Statement — Comms
  - Marine Corps Universal Urgent Need Statement — Comms & ISR
- Current orbital based space support stretched thin
- Recapitalization efforts pushed off to the right
- Future Army and Land Based Operations will become more dependent on persistent Comms and ISR
- Single layered Space Support puts success of Land Based operations at risk
- Ongoing SMDBL experimentation efforts have yielded significant insights into the Army's future Space capability requirements

Central Theme

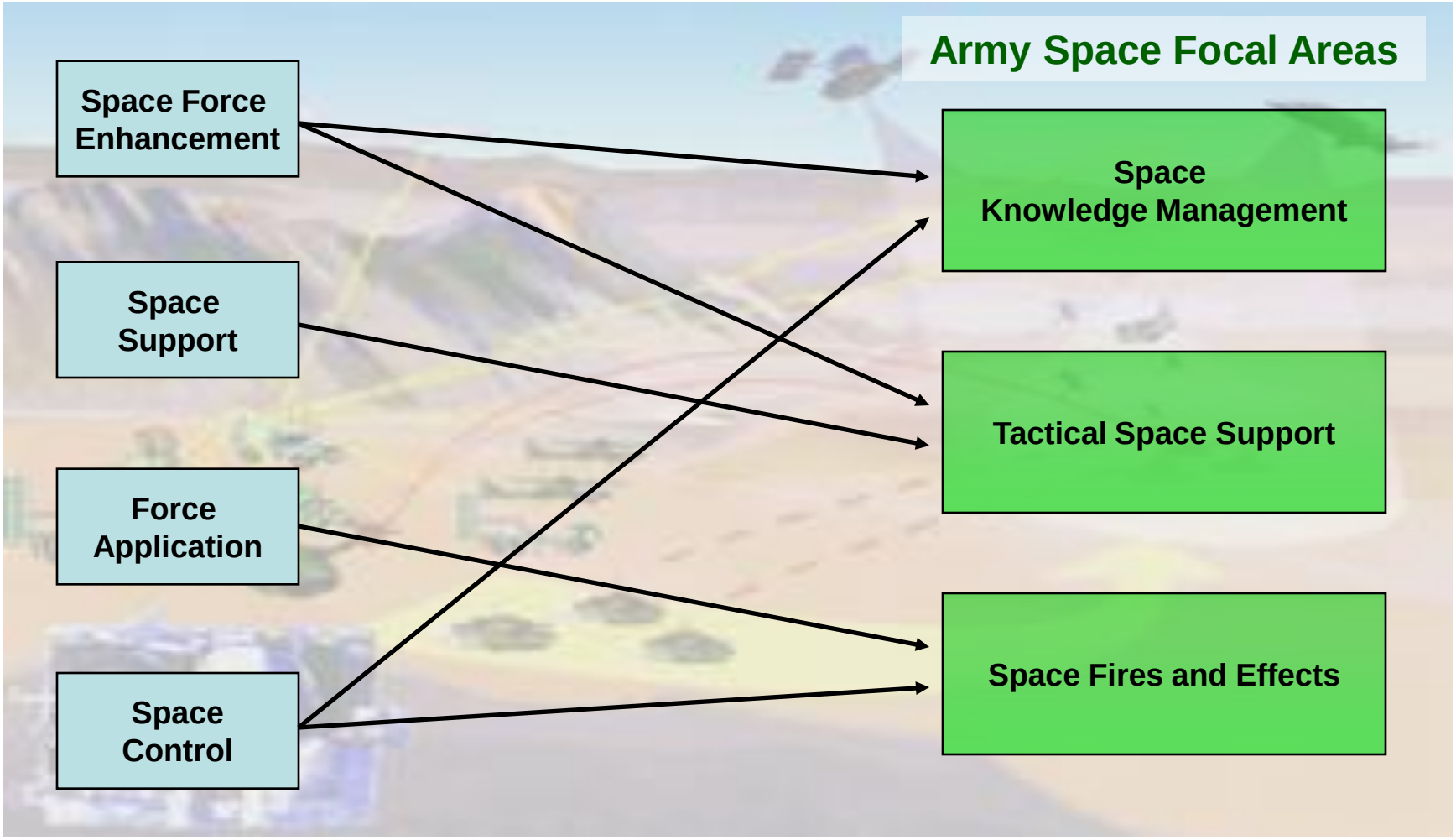
- Army Space Forces must become primary providers of tactically oriented space support and power in support of Land Component Operations
- Emerging capabilities offer the opportunity for Army Space Forces to tactically augment existing strategic oriented space capabilities with critical Space Based Force Enhancement capabilities
  - Intelligence/Surveillance/Reconnaissance (ISR)
  - Communications
  - Positioning/Navigation (POS/NAV)
- Future capabilities will allow the army to apply Space Power from tactically oriented Space Platforms
  - Space Control
  - Fires & Effects
  - Logistic Delivery
  - Maneuver Support
- Embedded Army Space Forces must evolve into Space Knowledge Managers that exploit our space superiority and power to enable maneuver forces

Army Space Operations must assure reliable and persistent access to Space Power

Army Space Today

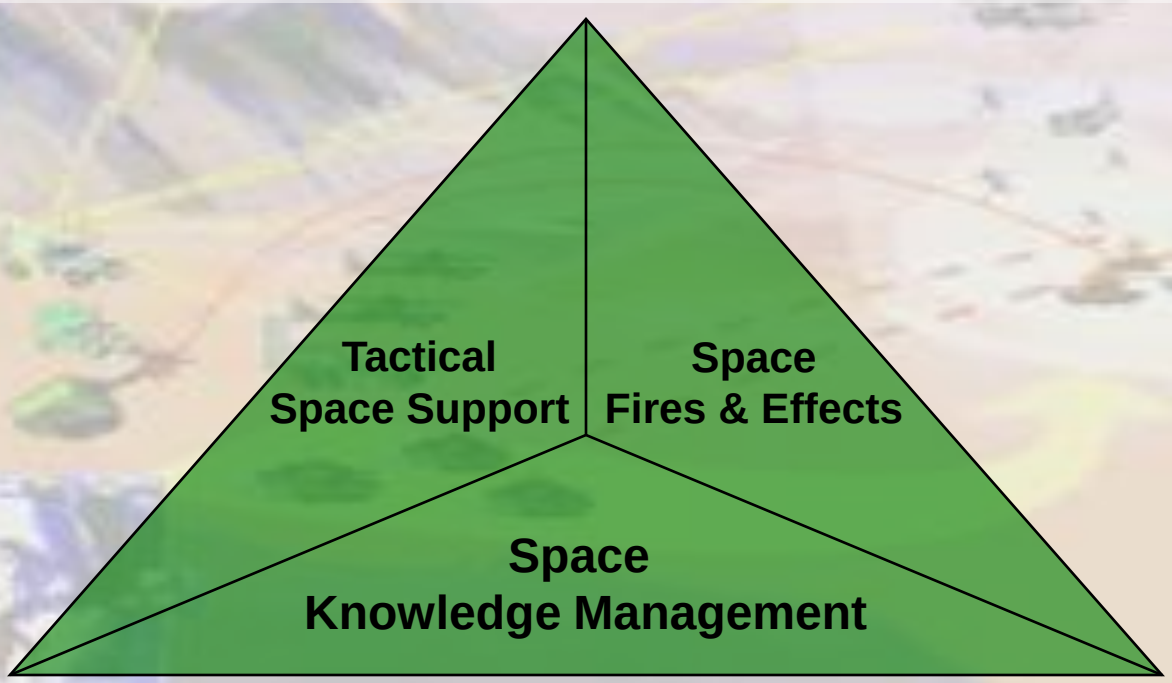


Redefining Space Power for Army Needs



"Space Power" — An Army Perspective

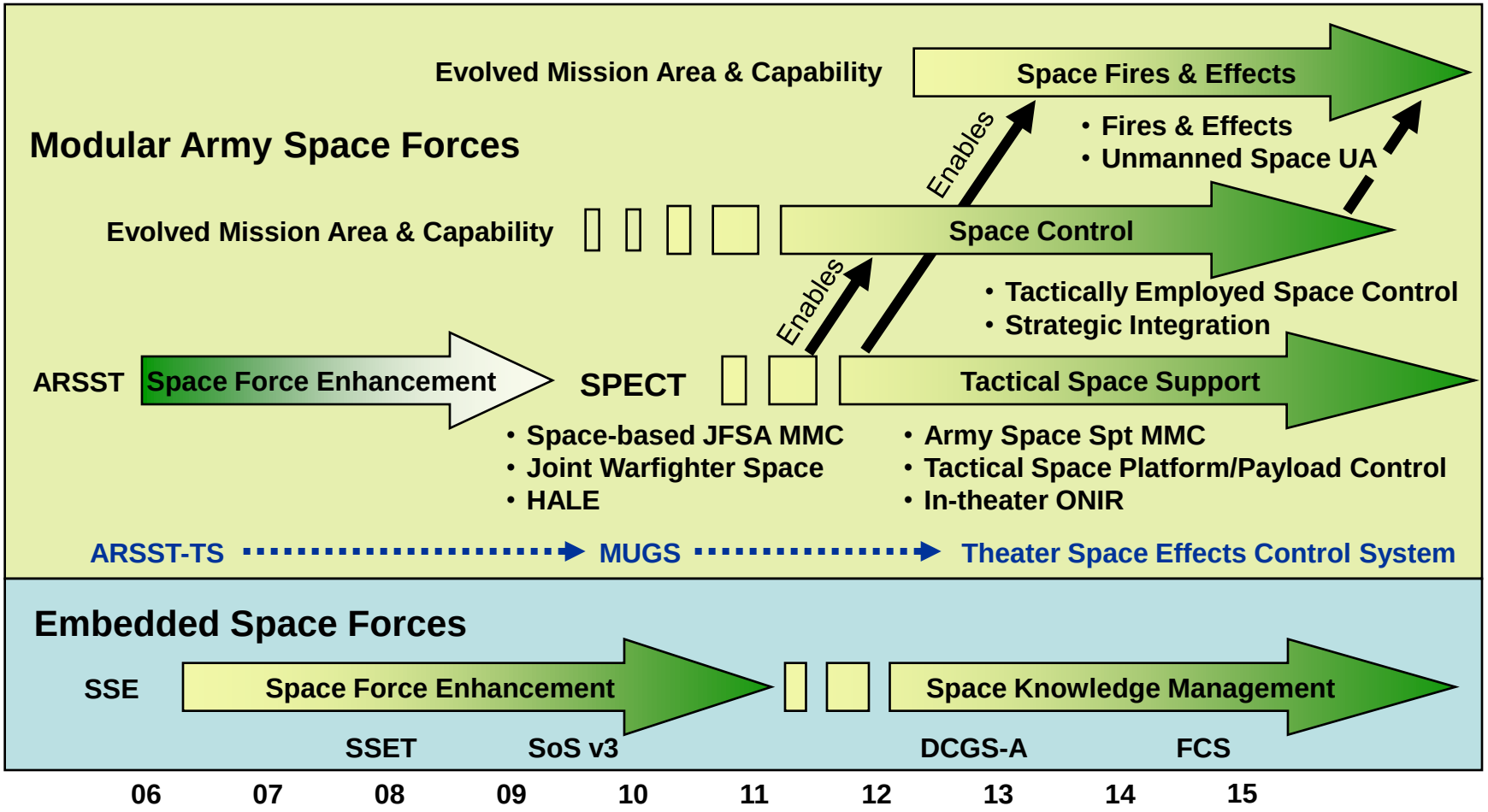
**Space Power is the ability
to integrate capabilities and apply effects
from all Space Mission Areas
in support of Land Component Combat Operations.**



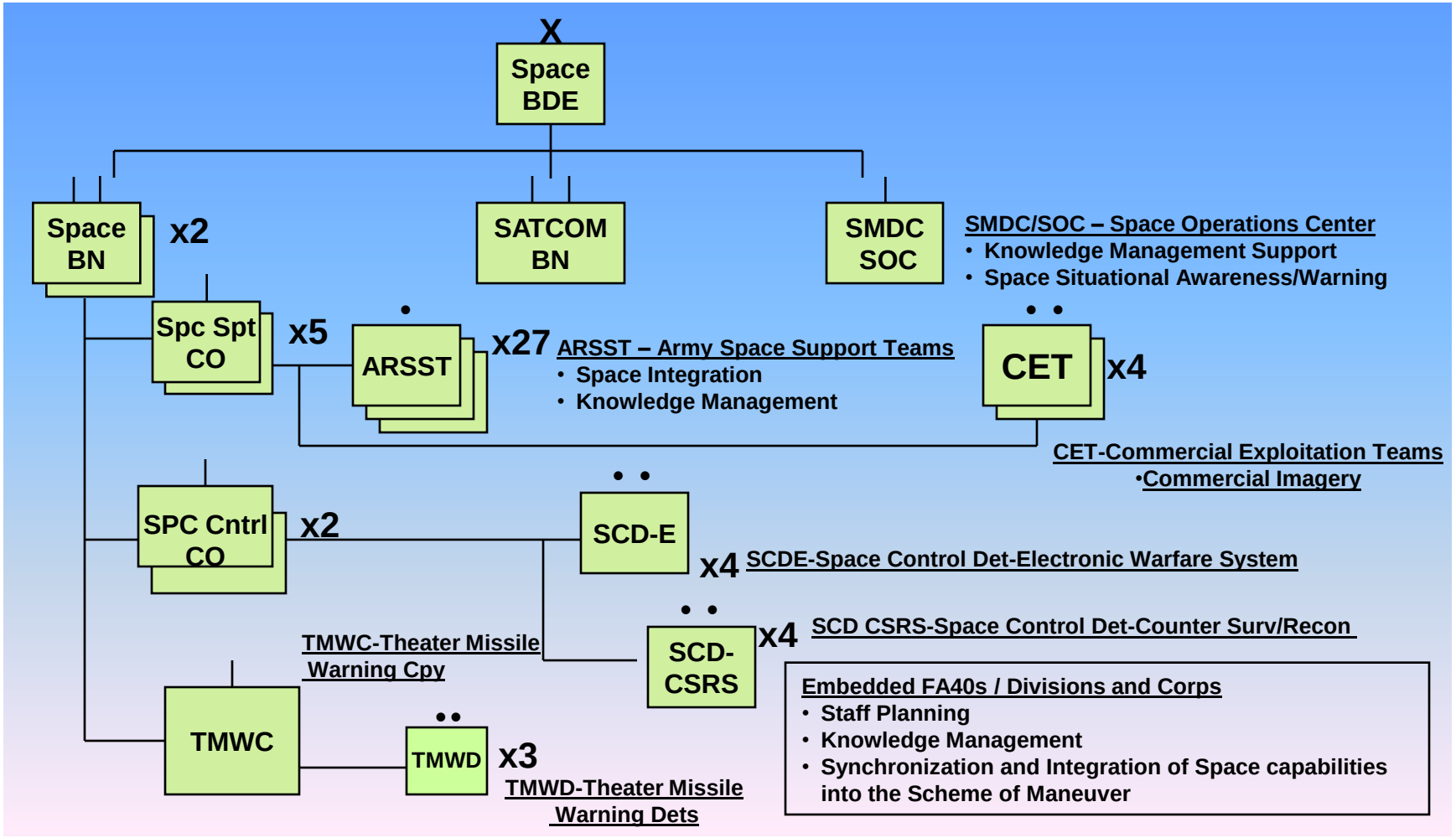
U.S. Army Space and Missile Defense Command/
Army Forces Strategic Command

Growing Army Space Power

Space Enhancement ⇢ Space Support ⇢ Space Control ⇢ Space Power



Future Tactical Army Space Forces



Army Space Power
circa 2035

The Future Battlefield

Network Centric Warfare Realized

The Future Army Force

- Smaller Force Structure
- A Faster, More Agile Force
- Rapidly Deployable
- Robotic and Increased Unmanned Platforms
- Network-Enabled
- Superior Situational Awareness
- Self-Supporting
- Beyond Line-of-Sight Communications and Fires
- Networked Logistics Support

The Network Centric Battlefield

- Global Information Grid is fully implemented
- Ubiquitous communications, self forming networks
- Full sensor-to-shooter integration
- Space assets will provide the backbone
- Near Space Platforms will provide the intra-theater “heavy lift” communications pipes
- Future Land Force will derive its lethality from the ability to move information rapidly, understand where the enemy is, and then engage the enemy at distance

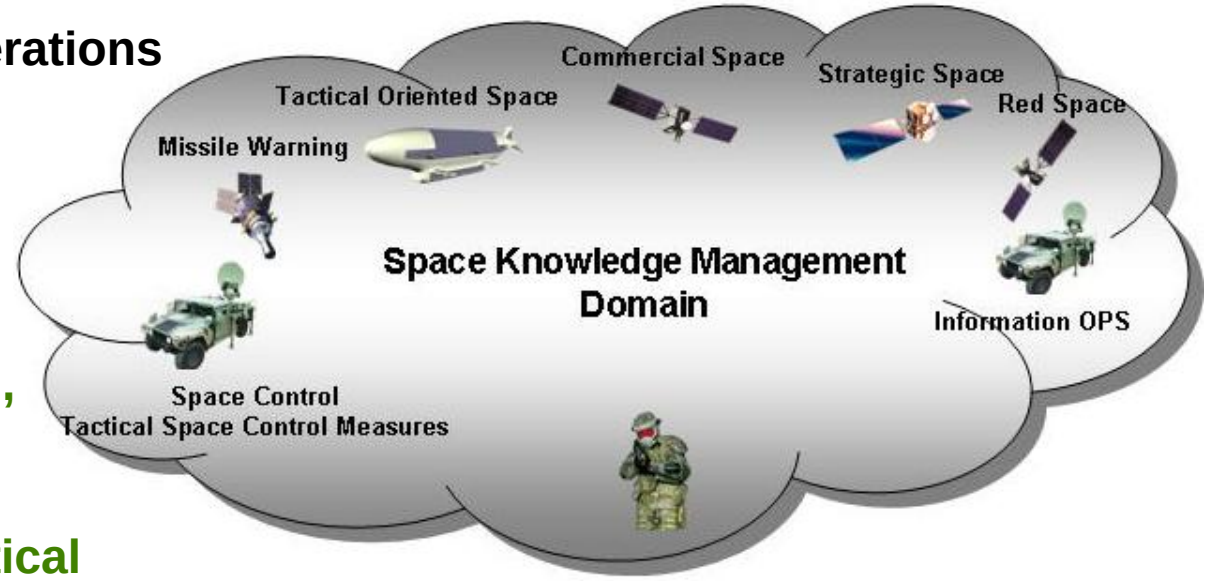
Rest of the World

- All nations are potential space actors
  - Widespread availability of commercial services
  - Cheaper access to space
  - Small and cheaper satellites
- International consortiums that pool space resources
  - Smaller state adversaries will gain access via larger Peer Competitor
- Proliferation of space weapons & space control technologies
- Increased competition for orbital real estate and spectrum
- Systems such as Galileo threaten US space dominance
- Near Space technologies will provide space-like capabilities

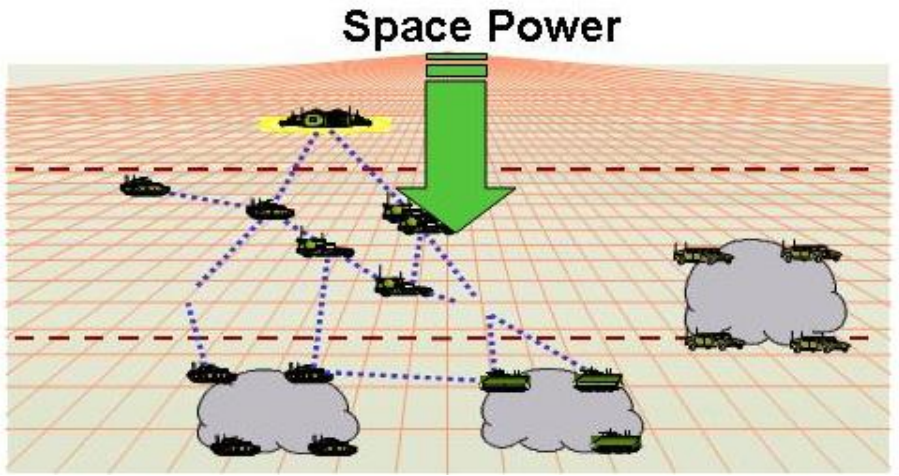
Space Knowledge Management

Embedded Space Operations Officers no longer Product centric

Space Officers focused on planning, integrating, and synchronizing Space Power into Operational and Tactical Schemes of Maneuver



Getting
the right information/asset
to the right people
at the right time
for the right objective



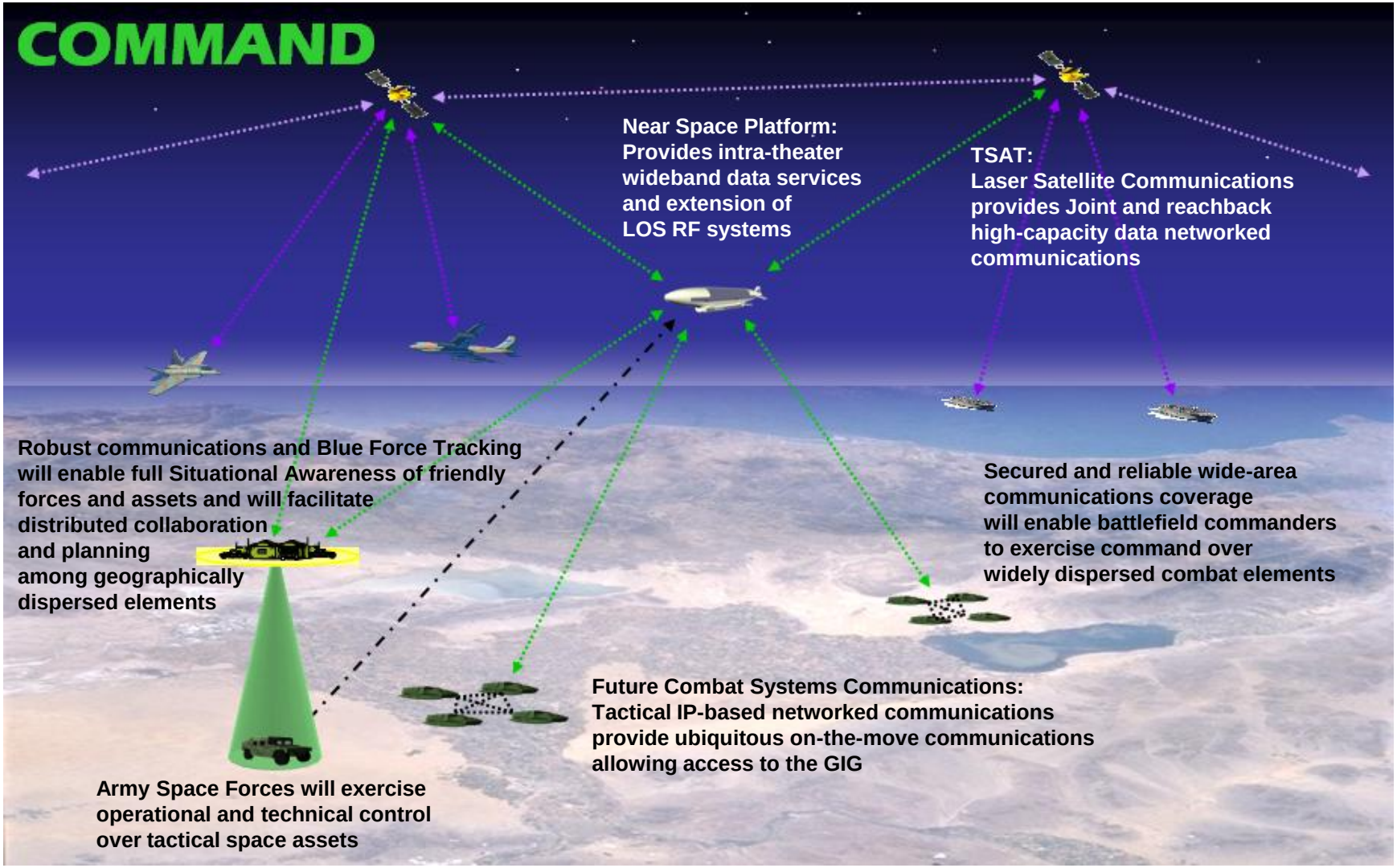
Technology Drivers

- Near Space / HALE Platforms
  - Driven by the commercial market
- Mobile Networking technologies
  - Protocols
  - Antennas: enabling true on-the-move capabilities
  - Self Forming Networks
- Responsive Space
  - More affordable payload to orbit launch capabilities
  - Smaller satellites
  - Satellite Control infrastructure
    - IP vs. Specialized TT&C Data links
- Nano-Technologies
- Laser Communications
- Knowledge Management Systems

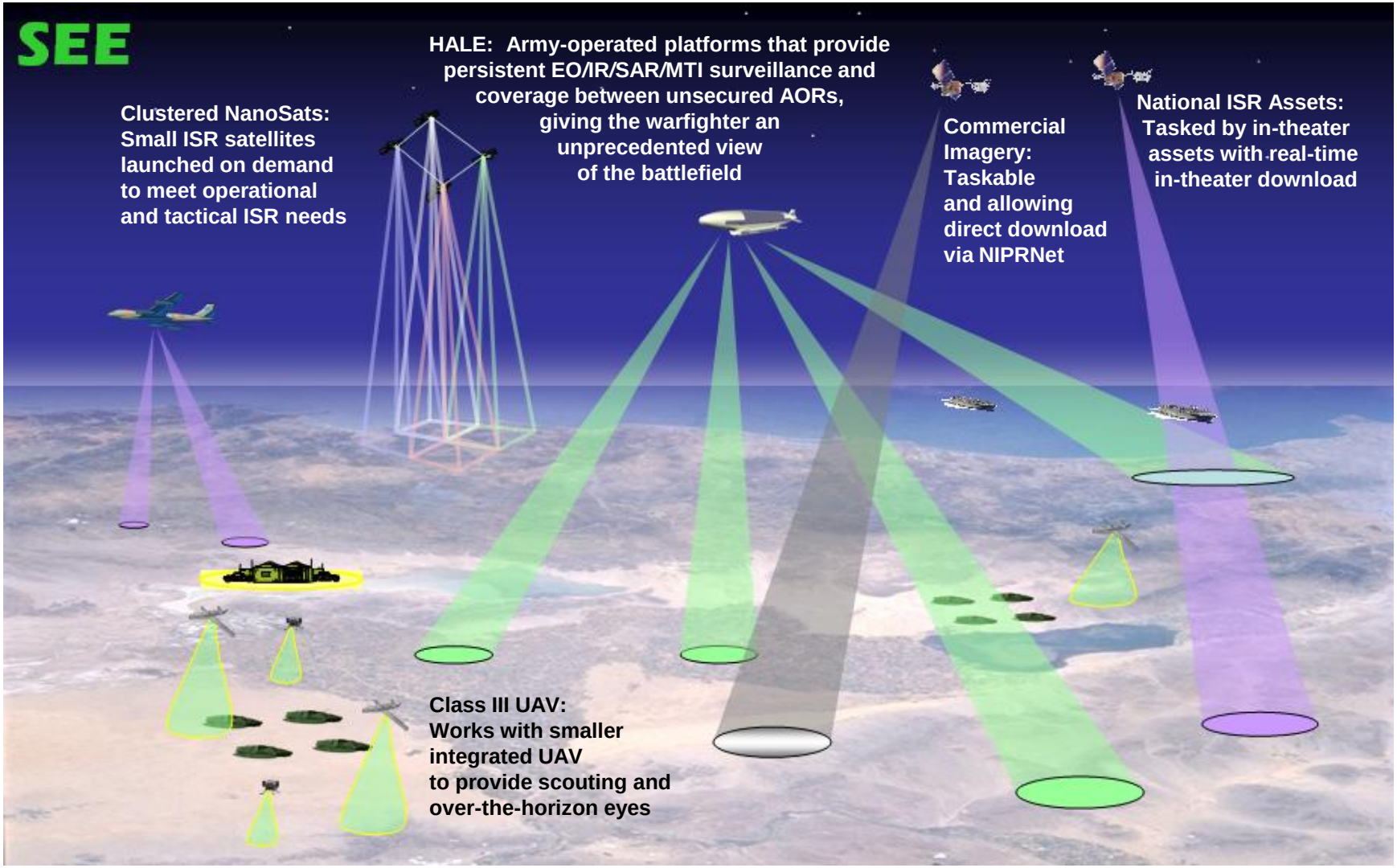
Space Technology Wildcards

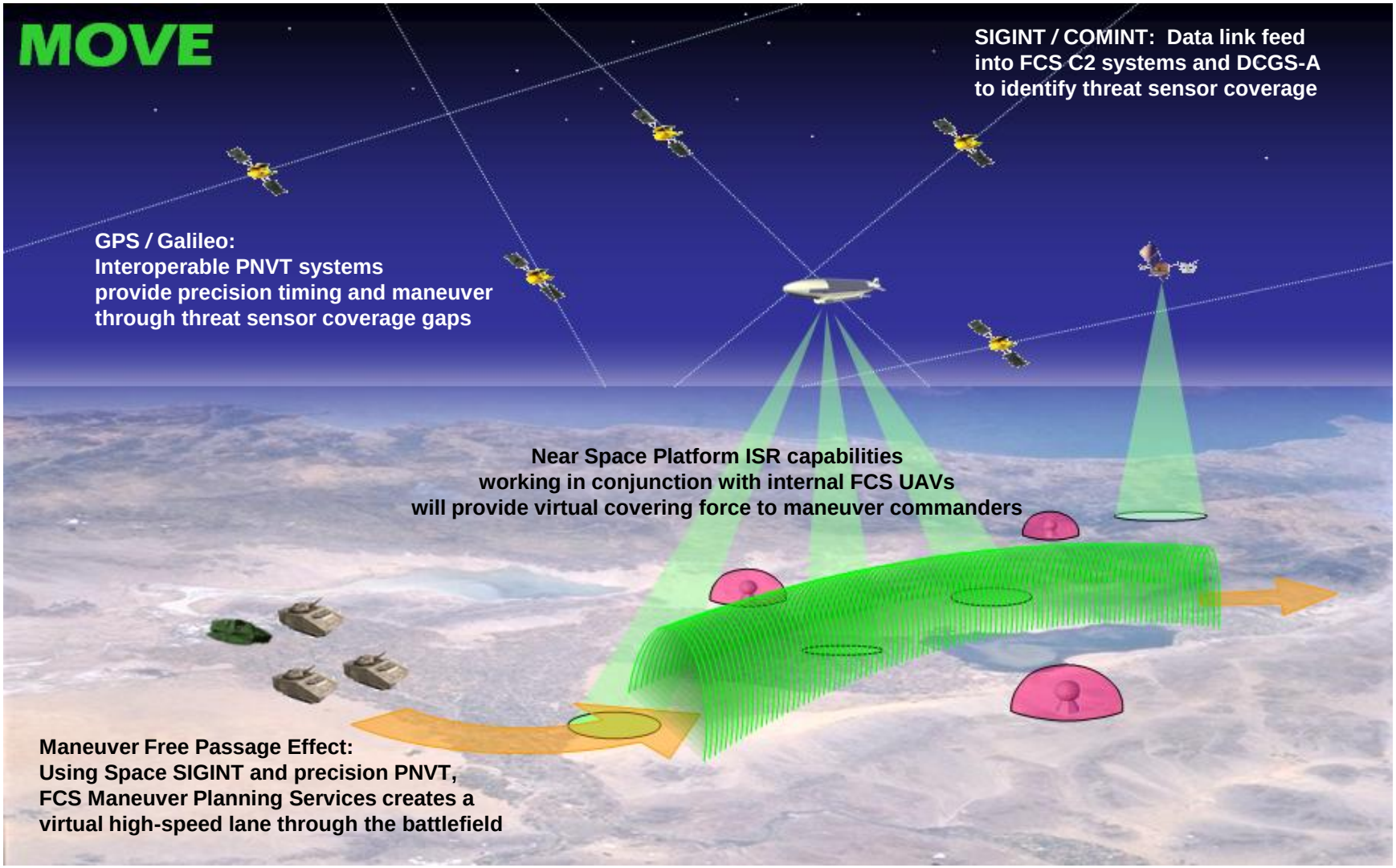
- Civil Space Ventures
  - Return Manned Flight to the Moon
  - Manned Exploration of Mars
- Propulsion
  - Nuclear
  - Alternative Fuels
- Commercial
  - Tourism
    - Commercial Space Sightseeing Flights
    - Orbital Hotels
  - Hypersonic Transport
- Solid State Laser Weapons Technology
- ROW Technological Advancements

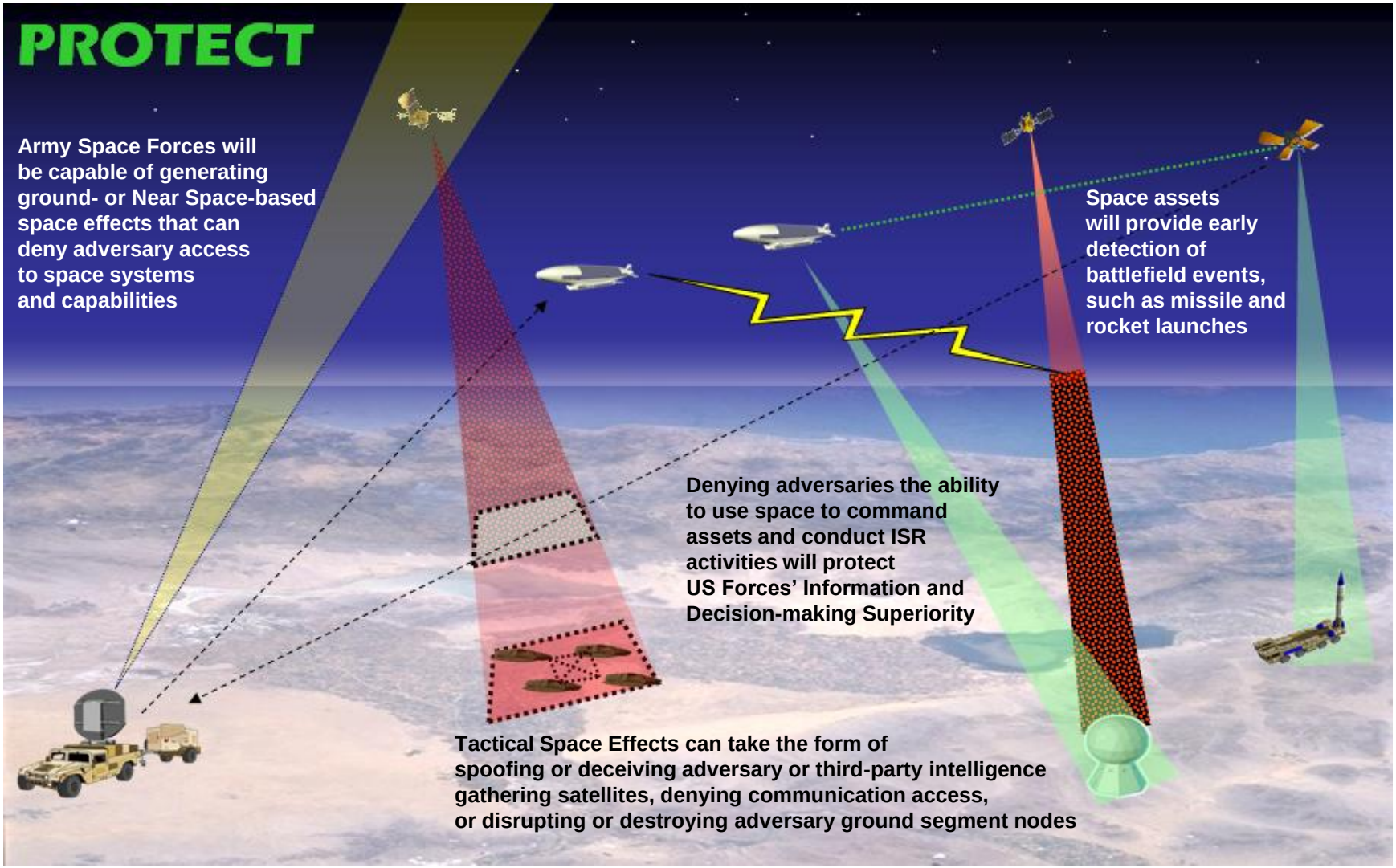
U.S. Army Space and Missile Defense Command/ Army Forces Strategic Command



U.S. Army Space and Missile Defense Command/ Army Forces Strategic Command



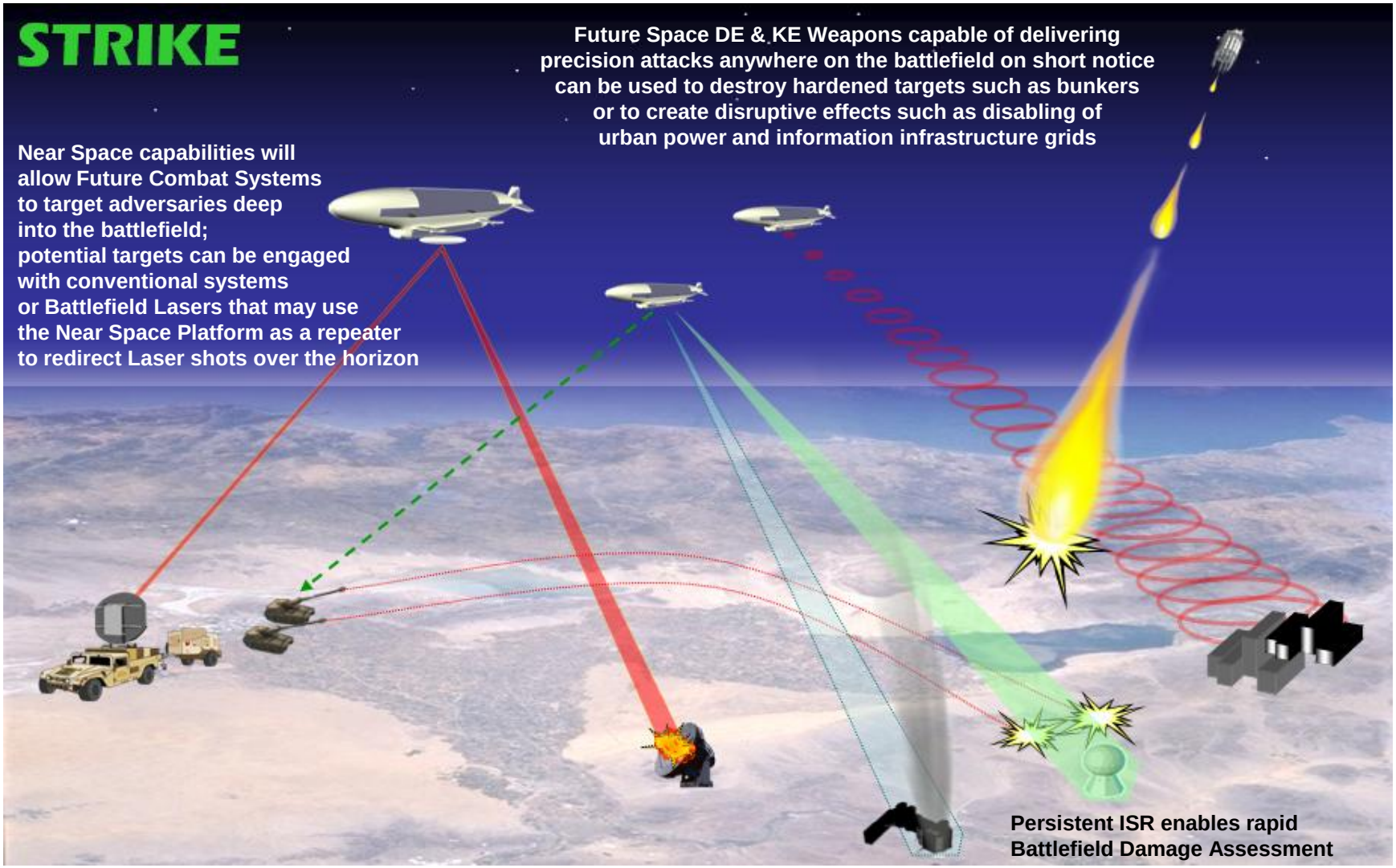

MOVE
SIGINT / COMINT: Data link feed into FCS C2 systems and DCGS-A to identify threat sensor coverage
GPS / Galileo:
Interoperable PNVT systems
provide precision timing and maneuver
through threat sensor coverage gaps
Near Space Platform ISR capabilities
working in conjunction with internal FCS UAVs
will provide virtual covering force to maneuver commanders
Maneuver Free Passage Effect:
Using Space SIGINT and precision PNVT,
FCS Maneuver Planning Services creates a
virtual high-speed lane through the battlefield


PROTECT
Army Space Forces will be capable of generating ground- or Near Space-based space effects that can deny adversary access to space systems and capabilities
Space assets will provide early detection of battlefield events, such as missile and rocket launches
Denying adversaries the ability to use space to command assets and conduct ISR activities will protect US Forces' Information and Decision-making Superiority
Tactical Space Effects can take the form of spoofing or deceiving adversary or third-party intelligence gathering satellites, denying communication access, or disrupting or destroying adversary ground segment nodes

STRIKE

Future Space DE & KE Weapons capable of delivering precision attacks anywhere on the battlefield on short notice can be used to destroy hardened targets such as bunkers or to create disruptive effects such as disabling of urban power and information infrastructure grids

Near Space capabilities will allow Future Combat Systems to target adversaries deep into the battlefield; potential targets can be engaged with conventional systems or Battlefield Lasers that may use the Near Space Platform as a repeater to redirect Laser shots over the horizon

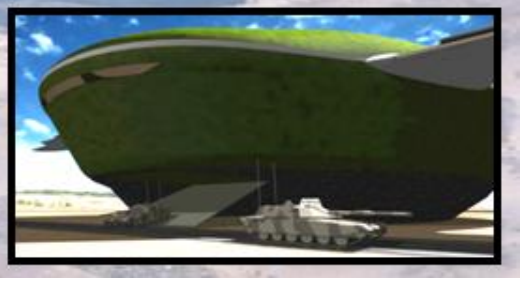


Persistent ISR enables rapid Battlefield Damage Assessment

SUSTAIN

Robust battlefield communications enable the GIG, allowing continuous monitoring and reporting of combat readiness and status; combat resupply is automatically coordinated via FCS Planning Services

Near Space Platforms and Airships of the future, such as the Walrus, can be used to conduct heavy lift and on-call combat replenishment operations



Near Space Platforms can beam in power to recharge power supplies for combat elements

Conclusion

- Space must be *Tactically Focused*
- The Army is dependent on Space, and that dependence is growing
- Persistent and reliable *Space Power* is required to support Future Land Component Combat
- Emerging opportunities exist for the Army to build and integrate *Space Power* and effects into Operational and Tactical Maneuver
- The Army must develop *Tactical Space* capabilities and the supporting Space Force structure to enable these potent capabilities
- Future Space Capabilities will be driven by civil, commercial and foreign technology developments

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BACK-UPS

Purpose

- Present an emerging theory on how *Army Space Power* will develop
  - 2015 time frame
  - 2035 time frame
- Introduce two papers to generate discussion
  - Future Capability Impacts
  - Future Army Space Forces Roles and Missions
  - How the Army Integrates Space on the Battlefield

Final Thoughts

"It's tough to make predictions, especially about the future."

–Yogi Berra

Tactical Space Support

Operational Employment: Army Space Forces will provide Tactically focused space support to the Land Component Warfighter by deploying Tactically Oriented Space / Near Space capabilities that will augment key Space Force Enhancements capabilities to existing ISR, Communications and POS/NAV strategic systems.

Key Enablers:

- High Attitude Long Endurance (HALE) Platforms
- Operational Responsive Space
- Joint Warfighter Space
- MUGS (Mobile User Ground Station)

Required Areas of Investigation:

- HALE Platform Endurance Technologies
- Payload Definitions
  - ISR, MTI, EO/IR
  - Communications
  - GPS Augmentation

Operational Payoff:

- Persistent ISR
- Enhanced Situational Awareness
- Network Centric warfare capabilities
- Distributed Operations

Space Fires & Effects

Operational Employment: Army Space Forces will deploy and employ Tactical Space systems that will provide direct engagement of adversary forces with destructive and disruptive effects. This will include employing capabilities that will deny adversary access to space intelligence and communications systems.

Key Enablers:

- Large Payload HALE
- Directed Energy / Kinetic Weapons
- Rapid and Precision Targeting
- Space Situational Awareness
- Normalization of Space Control Capabilities

Required Areas of Investigation:

- Space-Based Weapons
- Disruptive and Interference Technologies
- Logistical Delivery Systems
- Power Transmission Systems

Operational Payoff:

- Enhanced Networked Fires and Effects
- Shaping and Forced Entry Operations Support
- Enhanced Force Protection
- Denial of Space Access to Adversaries
- Information Dominance